

## IN THE US. PATENT AND TRADEMARK OFFICE

March 30, 1995

Applicants: Iver E. Anderson, et al.

For : Pb-FREE Sn-Ag-Cu TERNARY EUTECTIC SOLDER

Serial No.: 08/394 228

Group: 3205

Filed : Feb. 24, 1995

Examiner: Knapp

Atty. Docket  
No. ISU Case 340AThe Commissioner of Patents and Trademarks  
Washington, D.C. 20231

FAX REPLY REQUIRED

MAR 31 1995

GROUP 3200

## PRELIMINARY RESPONSE

Dear Sir:

Please amend the above-identified application as follows:

In the Claims

Please amend the following claims:

1. (Thrice Amended) A Pb-free electrical conductor solder consisting essentially of about 3.5 to about 7.7 weight % Ag, about 1.0 to about 4.0 weight % Cu and the balance essentially Sn wherein Sn is present in an amount of at least about 89 weight % Sn to promote formation of intermetallic compounds that improve solder [wettability on the electrical conductor, said solder being free of Ti, V, and Zr] strength and fatigue resistance.

5. (Thrice Amended) A Pb-free electrical conductor solder including a ternary eutectic composition consisting essentially of about 93.6 weight % Sn-about 4.7 weight % Ag-1.7 weight % Cu having a eutectic melting temperature of about 217°C and variants of said ternary eutectic composition wherein the relative concentrations of Sn, Ag, and Cu deviate from said ternary eutectic composition to provide a controlled liquid plus solid [mushy] temperature range with a liquidus temperature not exceeding 15°C above said eutectic melting temperature and at least two intermetallic compounds dispersed in a beta Sn matrix wherein one intermetallic compound includes Cu and Sn and another intermetallic compound includes Ag and Sn, said ternary composition and variants thereof being free of Ti, V, and Zr].